# DEEP NEURAL NETWORKS

## ASSIGNMENT

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- **Write a program to find multiple PCA from single data set and find PCA with maximum data spread.**

**CODE:**

```
from sklearn.decomposition import PCA
import numpy as np
```
[1] ✓ 5.4s Python

```
data = np.array([[1, 2, 3], [4, 5, 6], [7, 8, 9]])
```
[2] ✓ 0.0s Python

```
data
```
[7] ✓ 0.0s Python

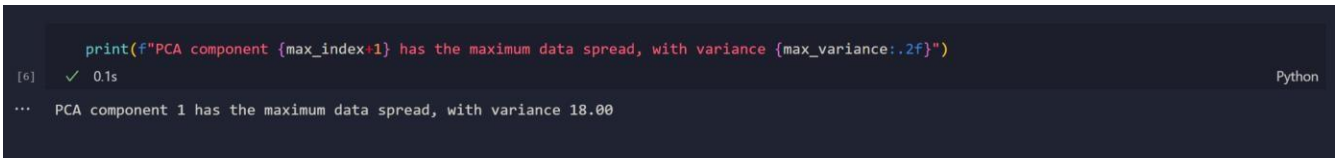
```
array([[1, 2, 3],
       [4, 5, 6],
       [7, 8, 9]])
```

```
pca = PCA(n_components=3)
```
[3] ✓ 0.0s Python

```
pca_data = pca.fit_transform(data)
```
[4] ✓ 0.0s Python

```
max_variance = 0
max_index = 0
for i in range(pca.n_components_):
    variance = np.var(pca_data[:, i])
    if variance > max_variance:
        max_variance = variance
        max_index = i
```
[5] ✓ 0.0s Python

# OUTPUT:


print(f"PCA component {max_index+1} has the maximum data spread, with variance {max_variance:.2f}")
[6] ✓ 0.1s
Python
PCA component 1 has the maximum data spread, with variance 18.00